

**Patent claims :**

- 1 . The calculating method for determining the dynamic unbalance in rigid rotor of the industrial rotating machine in field balancing, comprising the following steps :
  - a. measuring the displacements (magnitudes and directions) for the original vibration vector quantities caused by dynamic unbalance in rotor at the two bearings of the rotating machine without test runs attached with trial masses.
  - b. calculating the unbalance centrifugal forces at the two bearings of the rotating machine, based on the equation of motion which are using the data consists of the measured displacements, the measured or estimated frequency ratios and damping ratios of the bearing-and-rotor system.
  - c. determining the dynamic unbalance including two amounts and angles of unbalance vectors in two specified correction planes of the rigid rotor, by the geometric vector calculation based on the statics theorem which is using with the ratios concerning the relative distance lengths for the bearings of rotating machine and the two specified correction planes of rotor, which means that the unbalance centrifugal forces at the two bearings of the rotating machine can be transferred to the rotor body.
- 2 . The computer, measuring instrument and testing device, which the geometric vector calculating method of the claim 1 is directly or indirectly applied or equipped for determining the dynamic unbalance in rotor.

Amended by K.Tsuji  
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